REMARKS/ARGUMENTS

Initially, the Applicant would like to thank the Examiner for the early indication of allowable subject matter in this application. Currently, claims 7-10, 16 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base and any intervening claims. However, despite the indication of allowable subject matter, the Applicant feels that broader patent protection should be accorded the invention for at least the reasons set forth below.

On page 2 of the Office Action, the Examiner outlines a rejection to claims 1, 2, 11, 13, 14, 17-19, 22 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Wittern, Jr. et al. (U.S. Patent No. 6,302,293) in view of Holstein et al. (U.S. Patent No. 3,128,013) in view of Masters (U.S. Patent No. 4,999,556) in view of Feltrin (U.S. Patent No. 5,799,823) and further in view of Feltrin (U.S. Patent No. 6,321,936). The Examiner also provided rejections to claims 3-6, 12, 15, 20, 24 and 25 in the Office Action. These rejections are respectfully traversed.

In general, the present invention is directed to a vending machine including a vend motor assembly having a vend motor, a motor shaft, a rotation sensor, a position sensor and a controller operatively connected to both of the rotation and the position sensors. A cam member is connected to the motor shaft. Claims 1 and 23 require that the controller operates the vend motor through a pulse width modulated (PWM) signal to provide a soft start wherein a speed of the motor shaft is gradually increased upon activation of the motor. Claim 17 requires that the vend motor be controlled in a soft start mode wherein a speed of a motor shaft is gradually increased. Claims 1, 2, 11 and 22 require that the vend motor operates a cradle member that supports at least one of a plurality of product containers prior to a vend operation. Claims 1, 11 and 22 further require that the cradle member is regulated by the controller based on signals from the rotation and position sensors such that the cradle member is rotated to within 1/3° of a desired vend angle during a vend operation. In addition, claims 1 and 2 require that the vending machine includes a load bar mounted for pivotal movement relative to the cradle member, with the load bar being pivotal between a first position supporting a plurality of product containers, and a second position releasing at least one of the plurality of product containers into the cradle member. Finally, claims 1 and 2 further require that a push arm is connected between the vend motor assembly and the load bar, with the push arm being adapted to be shifted upon rotation of the motor shaft to selectively move the load bar between the first and second positions in order to replenish products in the cradle member.

In rejecting claim 1, the Examiner combines five U.S. patents. Specifically, the Examiner relies upon Wittern, Jr. et al. to disclose a cabinet frame and a plurality of walls positioned within a central cavity defined by the frame. Wittern, Jr. et al. is first modified by Holstein et al., with Holstein et a. being employed to teach a door having an opening that is pivotally mounted to a cabinet, as well as a product delivery chute, arranged below a plurality of stack areas, to guide a selected one of a plurality of product containers to the opening in the door. To this point, the Applicant agrees with the combination presented.

With regard to the vend motor assembly, the Examiner relies upon Masters to employ a motor control having a soft start feature. However, contrary to the position taken by the Examiner, Masters does not teach providing a soft start for a vend motor, with the soft start gradually increasing a speed of a motor shaft upon activation of a vend motor as required by at least claims 1 and 17. Most importantly, Masters is not at all concerned with the vending of products, but rather motor controls having features particularly desirable in the field of treadmills and beds (see column 1, lines 13-15). That being said, the Examiner relies upon language in column 3, line 20 to teach the soft start. However, in column 3, line 20, the specification merely describes providing a soft start to capacitors in order to limit surges on an AC input line. Soft starting capacitors in this manner does not lead to a gradual increase in motor shaft rotation or speed but merely limits a surge on the AC input line. In addition, contrary to the position taken by the Examiner, the Masters arrangement is not seen to include a rotation sensor, but merely an error sensor 42 that senses changes in an armature voltage feedback signal 44 which is combined with other signals to provide information concerning an error to a DC pulse generator 38.

In order to teach a position sensor, the Examiner relies upon Feltrin '936 which contains a drop sensor. The drop sensor in Feltrin is not a position sensor of a vend motor assembly analogous to that claimed, but rather senses when a particular product has been dispensed from a vending machine. Independent claims 1, 11 and 22 require the cradle member to be regulated by the controller based on signals from the rotation and the position sensors such that the cradle is rotated to within 1/3° of a desired vend angle during a vending operation. This specific limitation has not been addressed at any point in the Office Action. In rejecting the cradle member, the Examiner relies upon Feltrin '823 which at no point discusses this level of sensitivity, nor the desirability to control the rotation of a cradle member in this manner.

The Applicant respectfully submits that, not only do the applied references fail to teach many of the claim limitations as set forth above, but that there is simply no motivation to combine these teachings in the manner suggested by the Examiner. Instead, it is respectfully submitted that one of ordinary skill in the art would not combine the references in the manner suggested by the Examiner in order to obtain the present invention without the benefit of hindsight. As is widely known in case law and required throughout the M.P.E.P., claims of an application cannot be used as a blueprint or roadmap to combine prior art. In the present case, the Examiner is simply picking and choosing between multiple, unrelated disclosures an attempt to meet particulars of the present invention. None of the vending machine references applied by the Examiner discloses a need for soft starting a vend motor in order to limit wear and tear on machine parts as described in connection with the present application. Moreover, none of the references would benefit from the degree of sensitivity provided by the present application in dispensing products. In the combination presented by the Examiner, the combination relies upon the motor control of Feltrin. The Feltrin cradle rotates through 360° to vend a single product. At no point is there any need or disclosure for accurately controlling a particular vend angle associated with the Feltrin reference.

With respect to claim 2, the Examiner relies upon the '823 patent to Feltrin to teach the particulars of the push arm. That is, the Examiner is relying upon end arm 26 which is integrally formed with rocker bar 5A address the claimed limitations of a push arm that is operatively connected between a vend motor assembly and a load bar to move the load bar between first and second positions in order to enable replenishing of products contained within the cradle member. Initially, it should be noted that there is no motivation or suggestion in the art to combine the references in the manner suggested by the Examiner. Moreover, contrary to the position taken by the Examiner, end arm 26 is simply a portion of rocker bar 5A and does not constitute a push arm analogous to that described in connection with the present invention. In accordance with the present invention, the push arm actually pushes the load bar between the first and second positions to enable replenishing of products and does not simply serve as a pivot member as in the case of the Feltrin ('823) reference. That is, in accordance with '823 reference, end arm 26 is provided with a pin 27 that is acted upon by a cam member 14 which, in turn, causes rocker bar 5A to pivot about an axis defined by an opening (not separately labeled) in end arm 26. At no point does end arm 26 push rocker bar 5A.

On pages 5 and 6 of the Office Action, the Examiner rejects claims 22 and 23 stating that, while the combination of Wittern, Jr. et al., Holstein et al., Masters, Feltrin and Feltrin does not explicitly disclose a method of using the apparatus described, the method steps recited in the claims 22 and 23 would inherently be performed when using the apparatus obtained through the above combination in its usual and expected fashion. This rejection is respectfully traversed. Initially, it should be noted that claim 22 requires sensing a degree of rotation of a first rotating member of the vend motor unit, monitoring a position of a second rotating member of the vend motor unit, determining a vend angle position of the cradle based on the sensed degree of rotation of the first rotating member and the monitored position of the second rotating member, and rotating the cradle to within 1/3° of a desired vend angle to cause a selected one of the plurality of containers to fall into a delivery chute of the vending machine. The Applicant respectfully submits that the prior art combination presented by the Examiner fails to contain any structure which could perform the method outlined in claim 22. More specifically, as outlined above, the prior art combination of five references fails to teach a vend motor unit having a rotation sensor, position sensor and a controller that, through combined signals from the rotation and position sensors, rotates a cradle to within 1/3° of a desired vend angle. Moreover, there is simply no need in any of the applied references for, or any attempt to, controlling a vend angle in a manner required by claim 22. Thus, the five combined references could not physically, let alone inherently, perform the method steps recited in claim 22.

Claims 1 and 23 require sending a pulse width modulated signal to initiate operation of a vend motor and controlling the vend motor in a soft start mode by regulating the pulse width modulated signal so as to gradually increase a rotational speed of the vend motor. Simply stated, the five references combined by the Examiner fail to teach a vend motor that is controlled with a pulse width modulated signal so as to have a soft start that regulates or gradually increases a rotational speed of the vend motor. At best, the prior art includes one reference that discusses controlling a motor with a pulse width modulated signal and providing a soft start to a capacitor in the motor to limit an electrical surge on an AC input line. There is simply no teaching or suggestion to control a vend motor as claimed, let alone structure that would enable any apparatus constructed from the combined references to actually perform the steps set forth in claim 23. Lacking the specific structure required to perform the method, the five references combined by the Examiner could not possibly, either explicitly or inherently, perform the method steps recited in claim 23.

Referring to claim 5, the Examiner relies on a four-way combination of references to disclose a return spring adapted to return a push arm to a set position after the push arm moves a load bar to a second position. Initially, the Examiner correctly recognizes that Feltrin ('823) specifically discloses avoiding the need for a return spring in the apparatus to return the load bar to a first position. However, the Examiner then states that it would be obvious to one of ordinary skill in the art at the time the invention was made to include a return spring in Feltrin ('823). The Applicant is unclear as to how it would be obvious to add a return spring into a reference that specifically discloses that a return spring is not required. The '823 reference specifically states that the particular design and operation of the rocker bar and end arm combination is such that there is no need for a return spring or guide groove given that a pivot 7 is external with respect to supporting bar 30, thereby causing the rocker to always be pushed inwards. This language is seen to actually teach away from incorporating a return spring. Regardless of this logical inconsistency, none of the applied references teaches a return spring that operates in the manner corresponding to that set forth in claim 5.

The Examiner rejects claim 6 through the combination of Wittern, Holstein, Masters and Feltrin '936 stating that an ear element projection shown next to a spring member 16 in Figure 7 is analogous to that described in claim 6. Contrary to the position taken by the Examiner, at best, the "ear element" projection is not part of a push arm but merely part of basket 6.

With respect to the remaining claims, the Examiner fails to provide a single reference, let alone a combination of references, which teach many of the particulars of the present invention presented in dependent claim form. For example, none of the prior art, when taken singly or in combination, is seen to teach that the intermediate portion of the cradle includes at least one notch that establishes a vend angle for dispensing a product container during a vending operation as presented in claim 3. Furthermore, none of the prior art, when taken singly or in combination, teaches that the notch is constituted by a plurality of terraced notches, with the cradle being adapted to sequentially dispense product containers past respective ones of the plurality of terraced notches as the cradle is rotated during sequential vending operations as required by claim 4. Claim 19 requires that a pulse width modulated signal initially start with a low pulse width ratio. Claim 20 requires that the low pulse width ratio is substantially doubled with each successive pulse until a 100% duty cycle is achieved. As set forth above, it is respectfully submitted that these specific limitations are not taught in the prior art and the Applicant could not find where these limitations were addressed in the Office Action.

Based on the above remarks, the Applicant respectfully submits that the present invention is patentably distinguished from the prior art of record such that allowance of all claims and passage of the application to issue are respectfully requested. If the Examiner should have any additional questions or concerns regarding this matter, he is cordially invited to contact the undersigned at the number provided below if it would further the prosecution of the present invention.

Respectfully submitted,

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